

WHAT IS CLAIMED IS:

1. A method comprising:
drawing a substantially constant first current pulse from an energy storage cell during a first time period between a starting time and an ending time;
measuring a first change of a terminal voltage across the cell during the first time period; and
comparing the measured first change to first stored data to determine the energy remaining in the cell.
2. The method of claim 1, in which the drawing the first current pulse from the cell comprises drawing the first current pulse from a manganese dioxide battery.
3. The method of claim 1, in which the drawing the first current pulse from the cell comprises drawing the first current pulse from a silver vanadium oxide battery.
4. The method of claim 1, in which the drawing the first current pulse comprises drawing a substantially constant current of approximately between 2 amperes and 4 amperes.
5. The method of claim 4, in which the drawing the first current pulse comprises drawing a substantially constant current of approximately 3 amperes.
6. The method of claim 1, in which the first time period is approximately between 3 seconds and 30 seconds.
7. The method of claim 6, in which the first time period is approximately 6 seconds.

8. The method of claim 1, in which the measuring the first change comprises measuring a polarization angle.
9. The method of claim 1, in which the measuring the first change comprises:
measuring a first terminal voltage across the cell just after the starting time;
measuring a second terminal voltage across the cell just before the ending time; and
dividing a difference between the first and second terminal voltages by a time difference between the measurements.
10. The method of claim 1, in which the first stored data includes two different stored capacity values corresponding to a single change in terminal voltage across the cell during the first time period, and further comprising:
measuring a quiescent voltage of the cell; and
comparing the measured quiescent voltage to a predetermined threshold to distinguish between the two different stored capacity values that correspond to the single change in terminal voltage across the cell.
11. The method of claim 1, further comprising:
measuring a quiescent voltage of the cell; and
comparing the measured quiescent voltage to second stored data to determine the energy remaining in the cell.
12. The method of claim 11, further comprising:
using the measured first change to determine the energy remaining in the cell during an earlier portion of a life of the cell; and
using the measured quiescent voltage to determine the energy remaining in the cell during a later portion of the life of the cell.
13. A method comprising:

drawing a substantially constant first current pulse from an energy cell during a first time period;
measuring a first change in a terminal voltage across the cell during the first time period;
drawing a substantially constant second current pulse from the cell during a different second time period;
measuring a second change in the terminal voltage across the cell during the second time period; and
comparing the measured second change to first stored data to determine an energy remaining in the cell, including comparing the first and second changes to distinguish between two different stored capacity values that correspond to a single change in the terminal voltage across the cell.

14. The method of claim 13, in which the drawing the second current pulse includes drawing the second current pulse of a like magnitude and duration as the first current pulse.

15. The method of claim 13, in which the drawing the first current pulse from the cell comprises drawing the first current pulse from a manganese dioxide battery.

16. The method of claim 13, in which the drawing the first current pulse from the cell comprises drawing the first current pulse from a silver vanadium oxide battery.

17. The method of claim 13, in which the measuring first and second changes comprises measuring a polarization angle.

18. The method of claim 13, further comprising:
measuring a quiescent voltage of the cell; and

comparing the measured quiescent voltage to stored quiescent voltage data to determine the energy remaining in the cell.

19. The method of claim **18**, further comprising:

using the measured change to determine the energy remaining in the cell during an earlier portion of a life of the cell; and

using the measured quiescent voltage to determine the energy remaining in the cell during a later portion of the life of the cell.

20. A system comprising:

an energy storage cell;

a current source/sink circuit, coupled to the cell, to draw a substantially constant first current pulse;

a voltage measurement circuit, coupled to the cell, to measure first and second voltages during the first current pulse;

a difference circuit, coupled to the voltage measurement circuit, to compute a difference between the first and second voltages; and

a processor circuit, coupled to the difference circuit, the processor circuit including a memory circuit to store first data relating cell capacity to the difference between the first and second voltages, the memory circuit also including a cell capacity indicator storage location to provide an indication of cell capacity, the processor configured to use the difference between the first and second voltages obtained from the difference circuit and the stored first data indicative of cell capacity to provide the indication of cell capacity.

21. The system of claim **20**, in which the energy storage cell comprises a manganese dioxide battery cell.

22. The system of claim **20**, in which the energy storage cell comprises a silver vanadium oxide cell.

- 23.** The system of claim 20, in which the voltage measurement circuit is also configured to measure a quiescent voltage.
- 24.** The system of claim 23, in which the processor is configured to compare the measured quiescent voltage to a predetermined threshold to distinguish between two different stored cell capacity values that correspond to a single difference in terminal voltage across the cell.
- 25.** The system of claim 23, in which the memory circuit is also configured to store second data relating cell capacity to the quiescent voltage, and in which the processor is configured to compare the measured quiescent voltage to the second data to determine the energy remaining in the cell.
- 26.** The system of claim 25, in which the processor is configured to determine the energy remaining in the cell using the difference, during an earlier portion of a life of the cell, and using the measured quiescent voltage, during the later portion of a life of the cell.
- 27.** The system of claim 20, in which the processor is configured to compare first and second differences to distinguish between two different stored first data values that correspond to a single stored difference.
- 28.** The system of claim 20, in which the processor is located within an implantable medical device.
- 29.** The system of claim 20, in which the processor is located within an external remote interface device.